

REMARKS/ARGUMENTS

Claims 1, 11- 21, and 27-46 are pending in the present application. Claims 1, 11, 21, 29, 38, 41, 43 and 44 have been amended to better describe the present invention. Claims 45 and 46 have been added.

1. Applicants acknowledge and thank the Examiner for allowing claim 16 if rewritten in independent form. Applicants elect to not amend the claim at this time and will wait to the conclusion of the prosecution of the remaining claims.

2. Claims 1, 11-15, 17, 19-21, 28-36, and 41-44 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Fernald et al. (US Patent Application Publication 2004/0168523).

Independent claims 1, 11, 21, 41, 43, and 44 recite an apparatus or method including ultrasonic sensors disposed at locations along the conduit along a longitudinal direction of the conduit. Examiner contends that Fernald et al. show a method and apparatus having ultrasonic sensors disposed at predetermined locations along longitudinal directions of the conduit. The Examiner cites Fig. 12 units 115, 116, 117, 118 of Fernald et al. as showing such ultrasonic sensors.

Applicants contend that Fernald et al. does not show a method or apparatus having ultrasonic sensors. In fact, Applicants contend that Fernald et al. teaches away from the use of ultrasonic sensors. Referring to Fernald et al. (p.5, paras. 0062-0064), the sensors 115-118 are described as "acoustic pressure sensors". Fernald et al. does not show that the sensors are ultrasonic sensors. As described in Fernald et al. (p. 5, para. 0072), the acoustic pressure sensors 115-118 "sense acoustic pressure signals that, as measured, are lower frequency (and longer wavelength) signals than those used for ultrasonic probes of the prior art ..." (emphasis added). Fernald et al. further teaches away from using ultrasonic sensors as noted in the "Background Art" of the specification (see p. 1, para. 0003).

Applicants, therefore, submit that claims 1, 11, 21, 41, 43, and 44 are not anticipated by Fernald et al. for at least these reasons, and it is respectfully requested that these claims be reconsidered and allowed.

3. Claims 12-15, 17, 19, 20, 28-36, and 42 variously depend on independent claims 1, 11, 21, 41, 43, and 44, and therefore are not anticipated by Fernald et al. for at least the reasons provided hereinbefore. It is respectfully requested that these claims be reconsidered and allowed.

4. Claims 41, 43 and 44 stand rejected under 35 U.S.C. §102(e) as being anticipated by Lynnworth (US Patent Application Publication 2004/0011141).

Regarding independent claim 41, Examiner contends that Lynnworth discloses all the limitations of Applicants' claimed invention. Specifically, Examiner contends that Lynnworth discloses "an array of at least three ultrasonic sensors disposed longitudinally at predetermined locations along the conduit along a longitudinal direction of the conduit." Examiner specifically cites Fig. 2 and p. 2, paras. 0021-0023 of Lynnworth to support this contention. Applicants respectfully traverse the Examiner's rejection in light of the newly amended claim 41, which clarified the language to now include "an array of at least three ultrasonic sensors disposed at locations spaced along the length of the conduit in the direction of the flow of fluid." (emphasis added)

As shown in Fig. 2 of Lynnworth, the ultrasonic transducers 20, 22, 24 provide an ultrasonic signal to ultrasonic transducers 30, 32, 34. Each pair of transducers 20/30, 22/32, 24/34 provide a signal indicative of the transit time of each respective ultrasonic signal in each quadrature plane. Each transit time is used to determine the flow velocity (V_1 , V_2 , V_3) of the fluid in each respective quadrature plane. (see p. 3, para. 0042) While three pairs of transducers are used, the transducers are disposed circumferentially along the pipe, not along the length of the pipe in the direction of the flow of the fluid, as newly claimed in claim 41.

Examiner further cites p. 2, paras. 0021-0023 (which appears to describe the apparatus of Fig. 5) in the rejection of claim 41. As described in Lynnworth, the third plurality of ultrasonic transducers 150, 152, 154 are used to determine the density, not the velocity, of the fluid. (see p. 2, paras. 0021, 0022 and p. 4 para. 0052) Applicants therefore submit that the embodiment in Fig. 5 does not show Applicants' invention as claimed in claim 41.

Applicants, therefore, submit that claim 41 is not anticipated by Lynnworth for at least these reasons, and it is respectfully requested that this claim be reconsidered and allowed.

Regarding independent claim 43, Examiner contends that Lynnworth discloses all the limitations of Applicants' claimed invention. Specifically, Examiner contends that Lynnworth discloses "each ultrasonic sensor providing a respective sensor signal indicative of a parameter of an ultrasonic signal propagating through the fluid substantially orthogonal to the direction of the fluid flow." Examiner specifically cites Fig. 2 and p. 2, paras 0021-0023 of Lynnworth to support this contention. Applicants respectfully traverse the Examiner's rejection in light of the newly amended claim 43, because Lynnworth does not show an ultrasonic sensor that provides a sensor signal "indicative of a parameter of an ultrasonic signal propagating through the fluid substantially orthogonal to the direction of the fluid flow." (emphasis added)

As shown in Fig. 1 of Lynnworth, the transducers 20, 22, 24, 30, 32, 34, which determine the flow velocity, transmit an ultrasonic signal at an angle non-orthogonal to the direction of the fluid flow. For example, the ultrasonic signal transmitted between transducers 20 and 30 is shown being transmitted from transducer 20 at a non-orthogonal angle relative to the direction of the fluid flow to a reflective surface 200a. The ultrasonic signal is then reflected at a non-orthogonal angle to transducer 30. The non-orthogonal transmission of the ultrasonic signal relative to the direction of the fluid flow is further evidenced in Figs 12, 14 and 15, and p. 1 para. 0013.

Applicants, therefore, submit that claim 43 is not anticipated by Lynnworth for at least these reasons, and it is respectfully requested that this claim be reconsidered and allowed.

Regarding independent claim 44, Examiner contends that Lynnworth discloses all the limitations of Applicants' claimed invention. Specifically, Examiner contends that Lynnworth discloses "a processor using an array processing algorithm to determine the flow velocity of the fluid." Examiner specifically cites p. 2, paras. 0021-0023 of Lynnworth to support this contention.

Applicants have amended claim 44 to be dependent on claim 41. Applicants therefore contend that claim 44 is allowable for at least the reasons provided herein before relating to claim 41.

Applicants further traverse the Examiner's rejection in light of the newly amended claim 44, because Lynnworth does not show a processor that uses an array processing algorithm to determine the flow velocity of the fluid. Lynnworth shows that the velocity is calculated based

on the upstream-directed and downstream-directed transit times of the ultrasonic energy in each plane. (p. 3, para. 0042, and p.1, para. 0013)

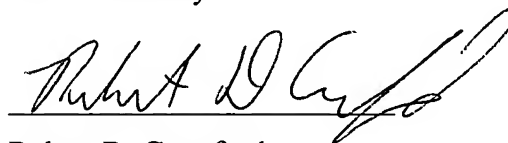
Applicants, therefore, submit that claim 44 is not anticipated by Lynnworth for at least these reasons, and it is respectfully requested that this claim be reconsidered and allowed.

5. Claims 18, 27, and 37-40 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Fernald et al. (U.S. Patent Application Publication 2004/0168523) in view of Lynnworth (US Patent Application Publication 2004/0011141). Claims 18, 27, and 37-40 variously depend on independent claim 11, and therefore is not rendered obvious by Fernald et al. in view of Lynnworth. It is respectfully requested that claims 18, 27, and 37-40 be reconsidered and allowed for at least the reasons provided hereinbefore.

6. A petition for a three-month extension of time under 37 CFR 1.136 is submitted herewith. Please debit our Deposit Account No. 50-0260 Order No. CC-0700 to cover the fees of **\$100.00** for the additional claims and **\$1020.00** for the three (3) month extension of time. Any deficiency or overpayment should be charged or credited to Deposit Account No. 50-0260 Order No. CC-0700.

Respectfully submitted,

Alan D. Kersey et al.

A handwritten signature in black ink, appearing to read "Robert D. Crawford", is written over a horizontal line.

Robert D. Crawford

Registration No. 38,119

CiDRA Corporation 50 Barnes Park North, Wallingford, CT 06492 Tel. (203) 626-3502